

# The Planets



Source: [NASA](#)





# Our Solar System: The Planets

## Activity 1: Memory

### Facilitator Notes

#### Objective:

Students will play a matching game to become familiar with the names of objects and structures in the solar system.

#### Materials Needed:

- Vocabulary cards
- Table or flat surface to play on

#### Summary of Student Action:

Students will take turns flipping over two cards from those laid out on the table. Cards may be removed to decrease the difficulty of the activity. When a student finds a matching pair, they hold on to it until the end of the game. The participant with the most pairs wins the game.

#### Setup Instructions:

- Print and cut out the cards.
- Place the cards face down in a grid pattern on the table.
  - If space allows, and you have a lot of participants, set up multiple games.

#### Delivery:

- This activity is intended to be delivered in person. For virtual options, explore the extension links in the implementation guide.



# Our Solar System: The Planets

## Activity 1: Memory Student Instructions

### Activate Your Knowledge:

What are the names of the planets in our solar system? What other structures and bodies can you name? Apply your memory skills by finding matching pairs in the set of cards laid out in front of you.

























### Materials You Will Need:

























- Vocabulary cards
- Table or flat surface to play on




















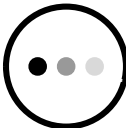
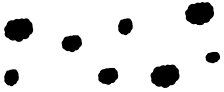



### Procedures:

























1. Make sure all the cards are lying face down on the table.
2. Decide an order for your group, so you know who will go first.
3. Take turns trying to find matching pairs of cards. Do so by flipping one card and attempting to find the location of its match.
4. If the cards do not match, flip them back over, and the next person takes a turn. If the cards do match, keep them in a pile in front of you. You get to go again if you find a matching pair.
5. After all the pairs have been found, count your pairs. The person with the most pairs wins the game.
6. Shuffle the cards and lay them facedown on the table for the next group.

The Planets - Activity 1 - Memory - Vocabulary Cards

<p>Mercury</p> 	<p>Venus</p> 	<p>Earth</p> 	<p>Sun</p> 
<p>Mercury</p> 	<p>Venus</p> 	<p>Earth</p> 	<p>Sun</p> 
<p>Mars</p> 	<p>Jupiter</p> 	<p>Saturn</p> 	<p>Asteroid Belt</p> 
<p>Mars</p> 	<p>Jupiter</p> 	<p>Saturn</p> 	<p>Asteroid Belt</p> 
<p>Uranus</p> 	<p>Neptune</p> 	<p>Pluto</p> 	<p>Solar System</p> 
<p>Uranus</p> 	<p>Neptune</p> 	<p>Pluto</p> 	<p>Solar System</p> 

Planet 	Star 	Galaxy 	Meteoroid 
Planet 	Star 	Galaxy 	Meteoroid 
Asteroid 	Meteor 	Comet 	Meteorite 
Asteroid 	Meteor 	Comet 	Meteorite 
Moon 	Milky Way 	Satellite 	Dwarf Planet 
Moon 	Milky Way 	Satellite 	Dwarf Planet 

Orbit 	Terrestrial 	Jovian 	Aurora 
Orbit 	Terrestrial 	Jovian 	Aurora 
Solar Wind 	Radiation 	Oort Cloud 	Eclipse 
Solar Wind 	Radiation 	Oort Cloud 	Eclipse 
Kuiper Belt 	Astronomy 	Nuclear Fusion 	Transit 
Kuiper Belt 	Astronomy 	Nuclear Fusion 	Transit 

<p>Probe</p> 	<p>Rover</p> 	<p>Shuttle</p> 	<p>Celestial</p> 
<p>Probe</p> 	<p>Rover</p> 	<p>Shuttle</p> 	<p>Celestial</p> 
<p>Nebula</p> 	<p>Rotate</p> 	<p>Revolve</p> 	<p>Crater</p> 
<p>Nebula</p> 	<p>Rotate</p> 	<p>Revolve</p> 	<p>Crater</p> 
<p>Ceres</p> 	<p>Makemake</p> 	<p>Haumea</p> 	<p>Gravity</p> 
<p>Ceres</p> 	<p>Makemake</p> 	<p>Haumea</p> 	<p>Gravity</p> 



# Our Solar System: The Planets

## Activity 2: Who Am I?

### Facilitator Notes

#### **Objective:**

Students will ask questions to make an educated guess about which body in the solar system their group leader is thinking of.

#### **Materials Needed:**

- Solar System Fact Sheet

#### **Summary of Student Action:**

Students will ask yes or no questions about the characteristics of planets. The group leader will answer yes or no, based on the planet they have in mind. Students will have a sheet of planet characteristics to reference as they ask the questions. After asking a question, a student may guess which planet the group leader is thinking of.

#### **Setup Instructions:**

- Distribute the table of characteristics to the participants.
- Choose one of the planets and prepare to answer questions about it.
- The first student to guess correctly wins the round.
- You may choose to allow students to do this in pairs or small groups.

#### **Delivery:**

- This activity is intended to be delivered in person but can be done virtually.
- When delivering virtually, share the table on your screen so all participants can see it.

#### **Additional Notes:**

- You may want to establish a turn order before beginning, so everyone has a chance to ask questions and make guesses.
- To discourage random guessing, you may tell students they will be eliminated if they guess incorrectly X number of times.





# Our Solar System: The Planets

## Activity 2: Who Am I?

### Student Instructions

#### **Activate Your Knowledge:**

What are the names of the planets in our solar system? What do they look like? How do they compare in size, appearance, and composition? Analyze the table carefully to become familiar with each body and its structure.

#### **Materials You Will Need:**

- Solar System Fact Sheet

#### **Procedures:**

1. Identify a leader in your group.
2. The leader in the group will choose one of the planets from the table and read about its characteristics.
3. After the leader has chosen one of the bodies, the rest of the group will take turns asking yes/no questions about the characteristics of the object.
4. When the group leader answers the question, make note of which objects from the table can be eliminated based on the answer.
5. The player whose turn it is may make a guess after asking a question. If their guess is correct, they win the round. If their guess is incorrect, the next participant can ask a question.
6. You may play multiple rounds with the same leader or rotate who the leader is.

## SOLAR SYSTEM FACT SHEET


Planet	Image	Orbit Distance	Radius	Revolution (year)	Rotation (day)	Type	Number of Moons	Rings	Average Temperature	Atmosphere
MERCURY ♀		36 million miles	1,516 miles	88 Earth Days	59 Earth Days	Terrestrial	0	No	333°F	None
VENUS ♀		67 million miles	3,760 miles	225 Earth Days	243 Earth Days	Terrestrial	0	No	867°F	Carbon Dioxide, Nitrogen
EARTH ⊕		93 million miles	3,959 miles	365 Earth Days	1 Earth Day	Terrestrial	1	No	59°F	Nitrogen, Oxygen
MARS ♂		142 million miles	2,106 miles	687 Earth Days	1.03 Earth Days	Terrestrial	2	No	- 85°F	Carbon Dioxide, Nitrogen, Argon
JUPITER ♃		484 million miles	43,441 miles	4,333 Earth Days	0.41 Earth Days	Gas Giant	75+	Yes	- 166°F	Hydrogen, Helium
SATURN ♄		886 million miles	36,184 miles	10,759 Earth Days	0.44 Earth Days	Gas Giant	82+	Yes	- 220°F	Hydrogen, Helium
URANUS ♅		1.8 billion miles	15,759 miles	30,687 Earth Days	0.72 Earth Days	Ice Giant	27	Yes	- 320°F	Hydrogen, Helium, Methane
NEPTUNE ♆		2.8 billion miles	15,299 miles	60190 Earth Days	0.67 Earth Days	Ice Giant	14	Yes	- 330°F	Hydrogen, Helium, Methane

Image Sources (NASA): [Symbols](#) [Mercury](#) [Venus](#) [Earth](#) [Mars](#) [Jupiter](#) [Saturn](#) [Uranus](#) [Neptune](#)



# Our Solar System: The Planets

## Activity 3: Planet Fan

### Facilitator Notes

#### Objective:

Students will create a solar system fan to identify the order of the planets, their visible features, and key characteristics.

#### Materials Needed:

- |   |  |
|---|--|
| <input type="checkbox"/> Template printout                        | <input type="checkbox"/> Images of the planets |
| <input type="checkbox"/> Markers, crayons, and/or colored pencils | <input type="checkbox"/> Stapler               |
|   | <input type="checkbox"/> Scissors              |

#### Summary of Student Action:

Students will reference images of the planets and the Sun to color each in the template provided. They will cut and paste the appropriate text to the backs of each planet's support. They will then cut out the planets and supports, and staple them together with the Sun on top.

#### Setup Instructions:

- Print out the templates and set them on the table.
- Provide coloring utensils, scissors, and staplers at the station.
- Display the images of the planets.
- Create an example for this activity in advance and display it as a visual reference.

#### Delivery:

- This activity is intended to be delivered in person. For virtual options, explore the extension links in the implementation guide.

#### Additional Notes:

- To increase engagement, you may have students write their own notes on the backs of the planet supports, rather than paste the printed text.
- There are two sets of cutouts included. One has outlines on the planets and can be used for younger students or those who may have difficulty drawing details.



# Our Solar System: The Planets

## Activity 3: Planet Fan

### Student Instructions

#### Activate Your Knowledge:

What are the names of the planets in our solar system, in order based on their distance from the Sun? What are the key visible features of each planet?

#### Materials You Will Need:

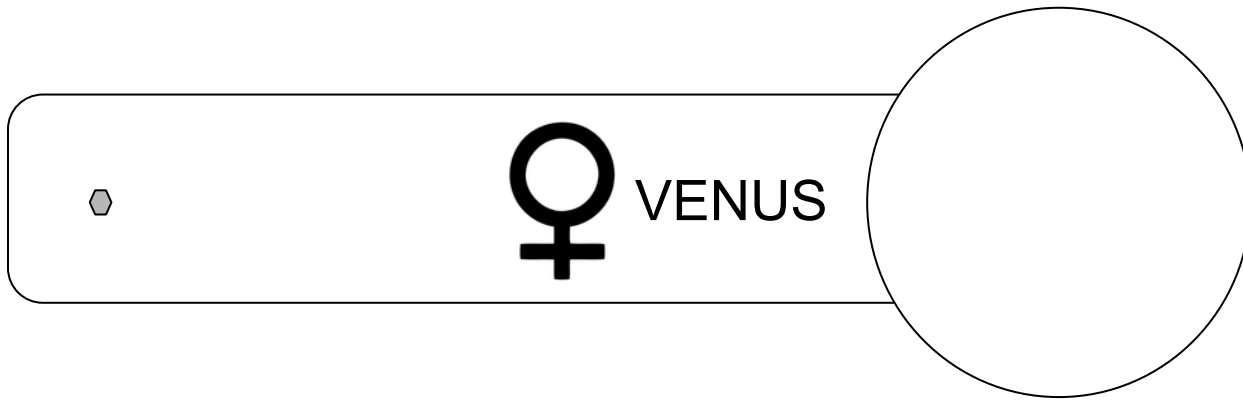
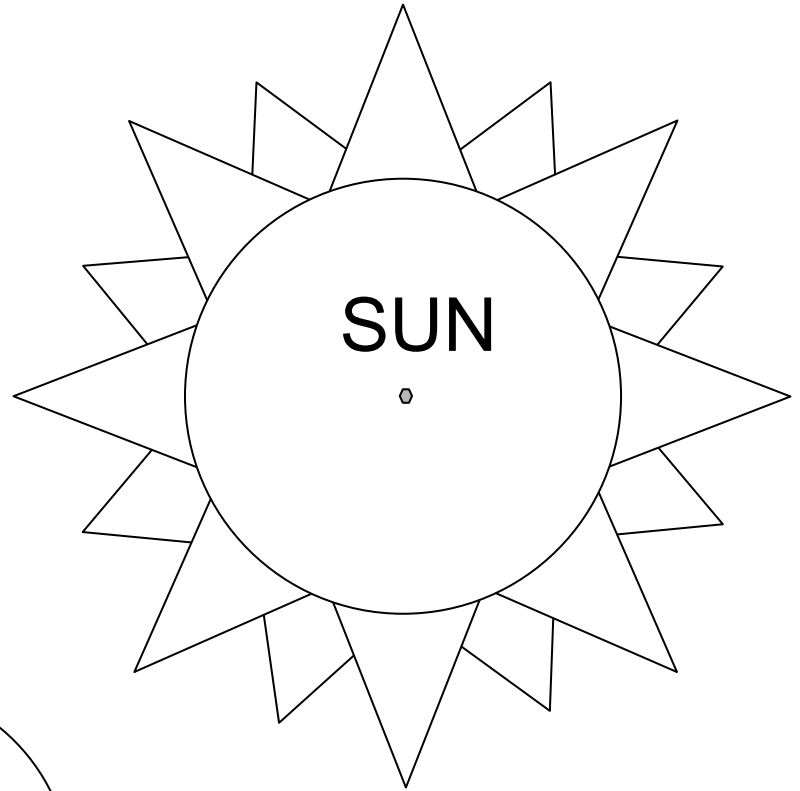
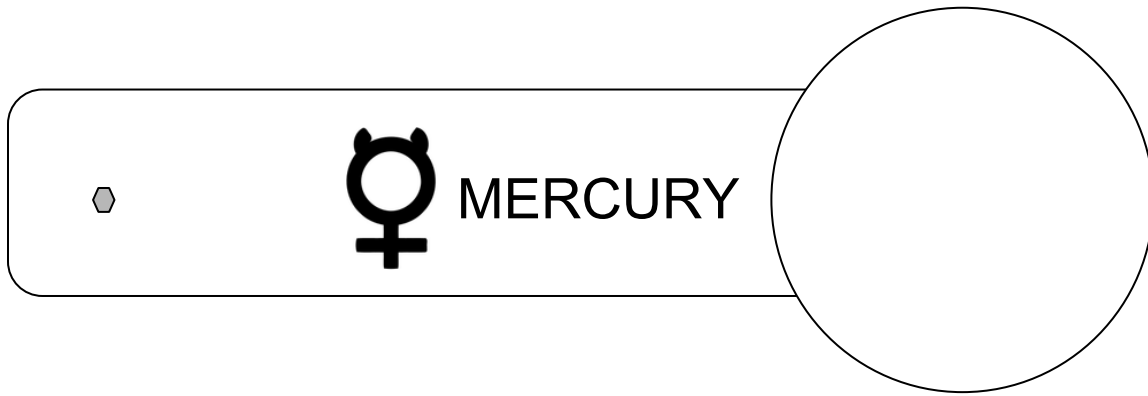
- |   |  |
|---|--|
| <input type="checkbox"/> Template printout                        | <input type="checkbox"/> Images of the planets |
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|   | <input type="checkbox"/> Scissors              |

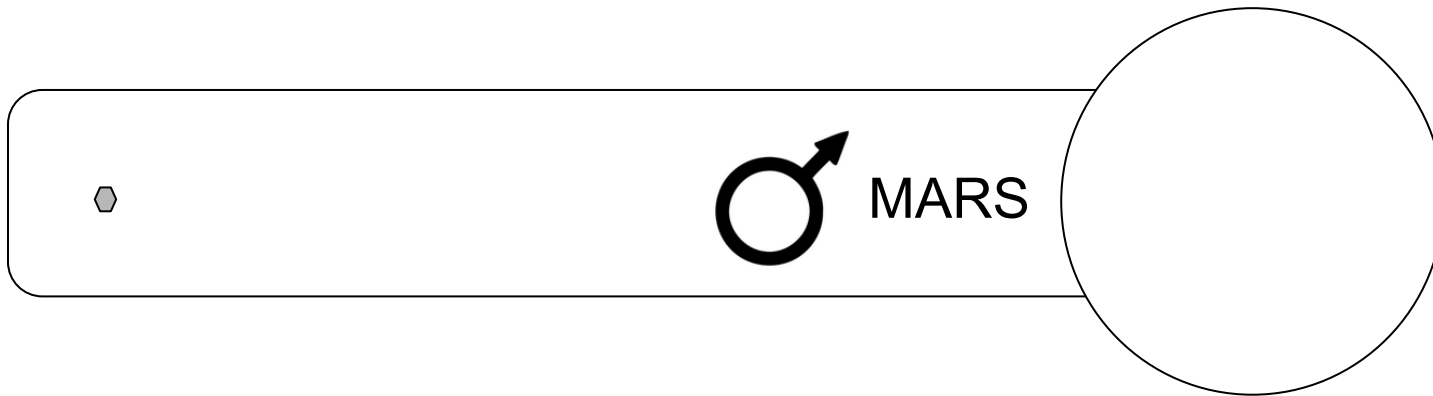
#### Procedures:

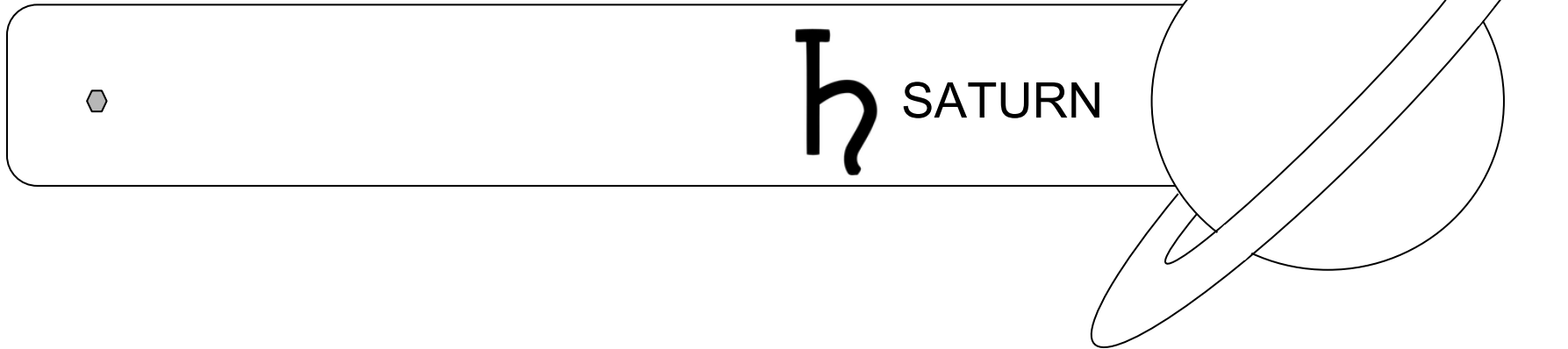
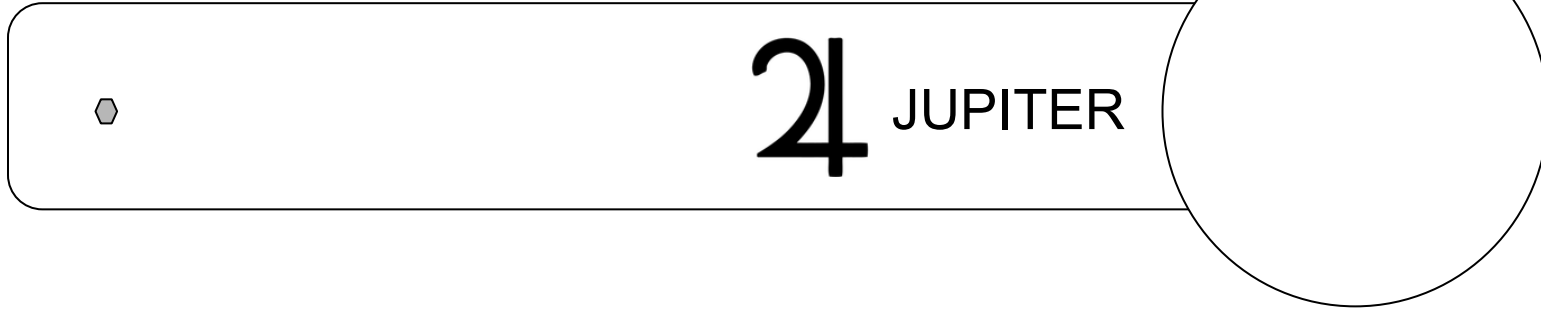
1. Color the Sun and each of the planets to show their visible features. Use the color images as a reference to help you choose your colors appropriately.
2. Cut out the Sun and planets, including the support posts that have the planets' names.
3. Cut out the text for each planet and paste it to the back of the support post.
4. Stack the planets in a fan, ensuring they are in the correct order and the dots at the end of the support posts are aligned.
5. Place the Sun on top, with its dot aligned with the rest of the stack.
6. Staple the stack at the center of the Sun, so your planets will be held in place. You may want to staple more than once to ensure a strong hold.

**NOTE:** Reference the example image for guidance.

# The Planets - Activity 3 - Planet Fan Template (V1)

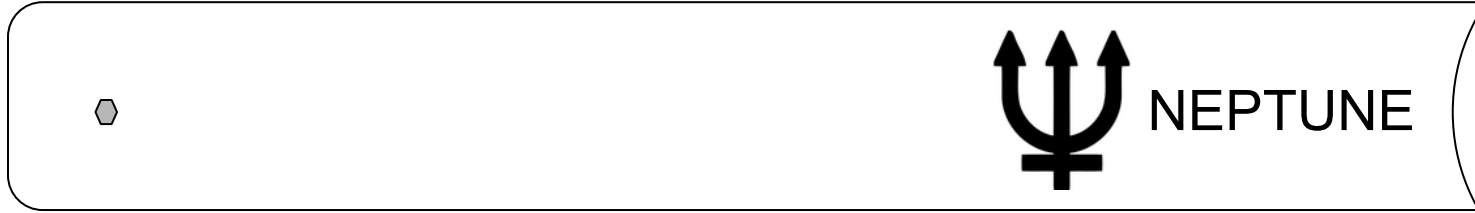
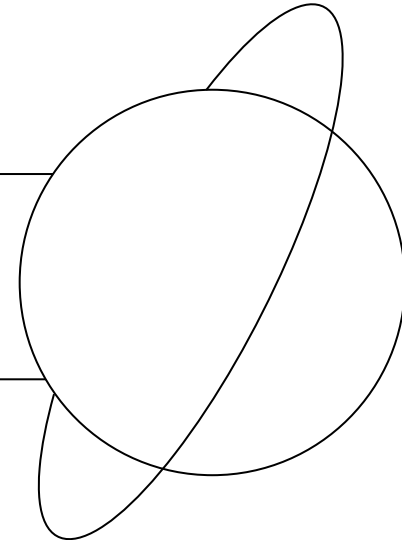




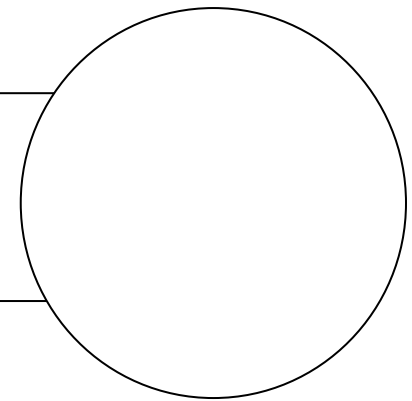




URANUS



NEPTUNE





<b>MERCURY</b>		<b>JUPITER</b>	
◆ inner, rocky (terrestrial) planet	◆ 88-day orbit	◆ outer, gaseous (Jovian) planet	◆ 4,333-day orbit
◆ very thin atmosphere	◆ no moon	◆ mostly hydrogen and helium	◆ more than 75 moons
◆ very dry	◆ smallest planet	◆ largest planet in the solar system	◆ has the "Great Red Spot"

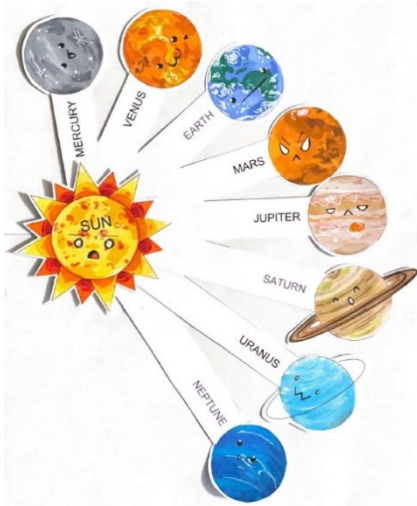
<b>VENUS</b>		<b>SATURN</b>	
◆ inner, rocky (terrestrial) planet	◆ 225-day orbit	◆ outer, gaseous (Jovian) planet	◆ 10,759-day orbit
◆ thick, carbon dioxide atmosphere	◆ no moon	◆ mostly hydrogen and helium	◆ visible rings of ice and rock
◆ clouds of sulfuric acid	◆ hottest planet	◆ 82 known moons	◆ the "flattest" planet

<b>EARTH</b>		<b>URANUS</b>	
◆ inner, rocky (terrestrial) planet	◆ 365-day orbit	◆ outer, icy (Jovian) planet	◆ 30,687-day orbit
◆ atmosphere with 21% oxygen	◆ one moon	◆ smallest "giant" planet	◆ 13 faint rings
◆ liquid water oceans	◆ harbors life	◆ mostly methane, water, ammonia	◆ 27 moons

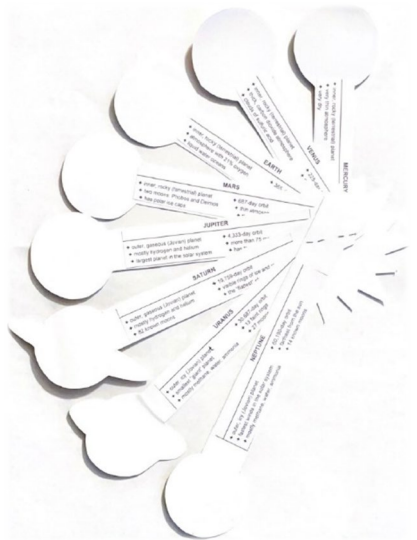
<b>MARS</b>		<b>NEPTUNE</b>	
◆ inner, rocky (terrestrial) planet	◆ 687-day orbit	◆ outer, icy (Jovian) planet	◆ 60,190-day orbit
◆ two moons: Phobos and Deimos	◆ thin atmosphere	◆ fastest winds in the solar system	◆ farthest from the sun
◆ has polar ice caps	◆ the "Red Planet"	◆ mostly methane, water, ammonia	◆ 14 known moons

## Example 1

Front

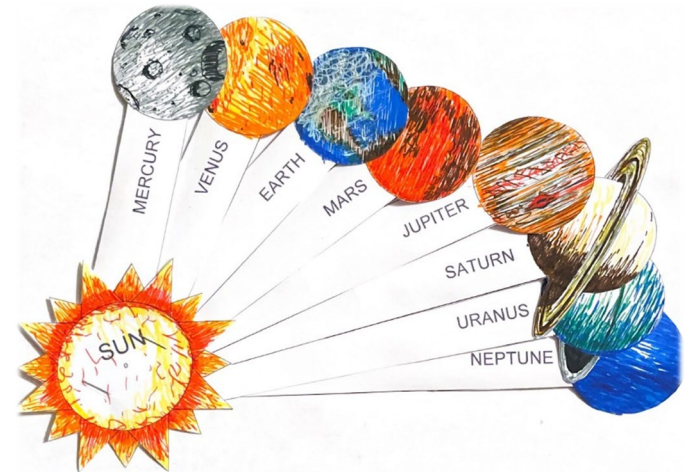


Back



## Example 2

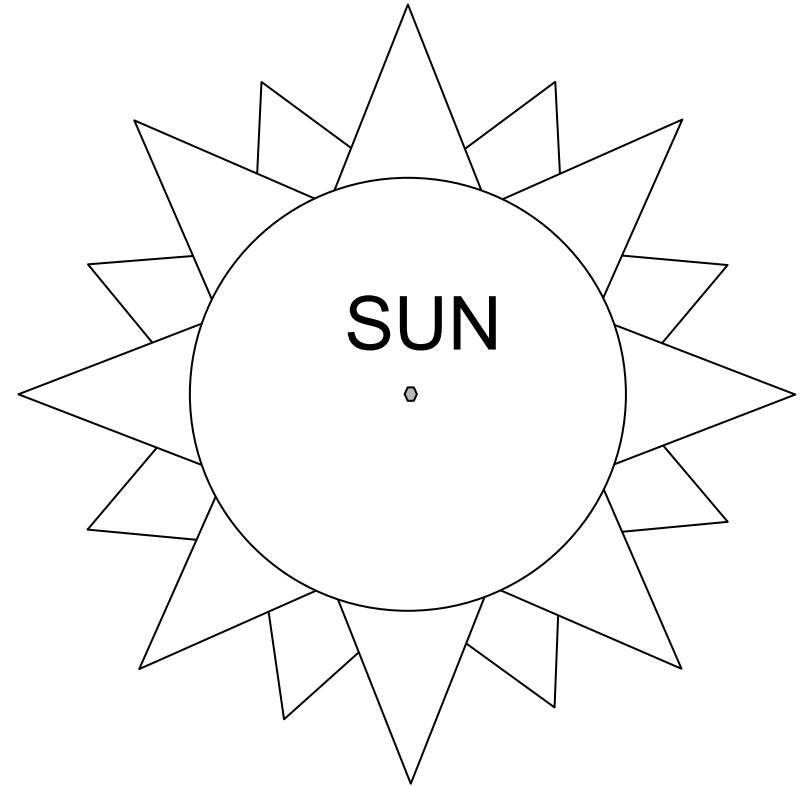
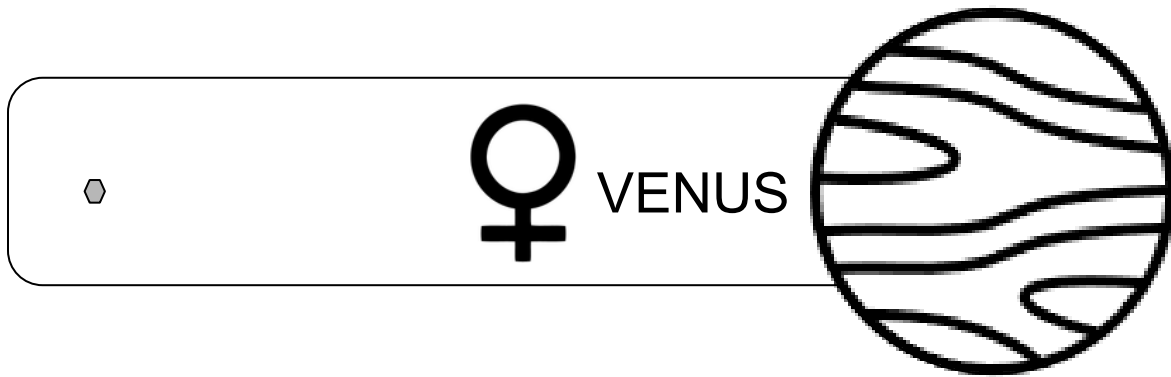
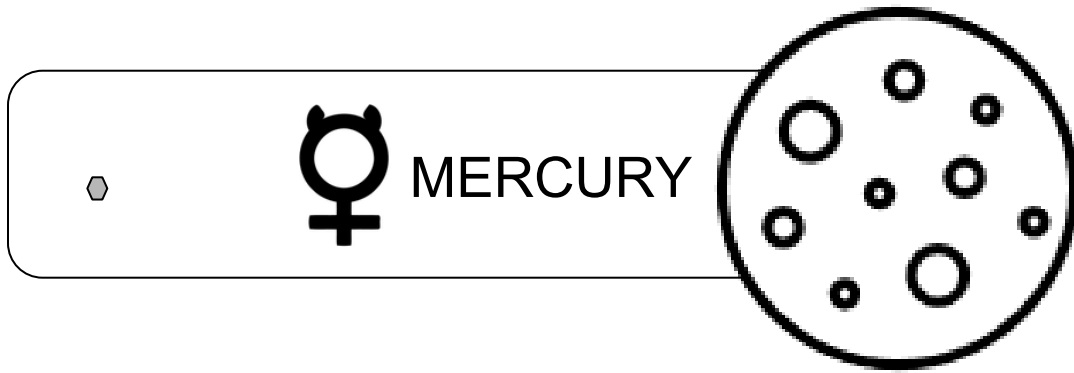
Front

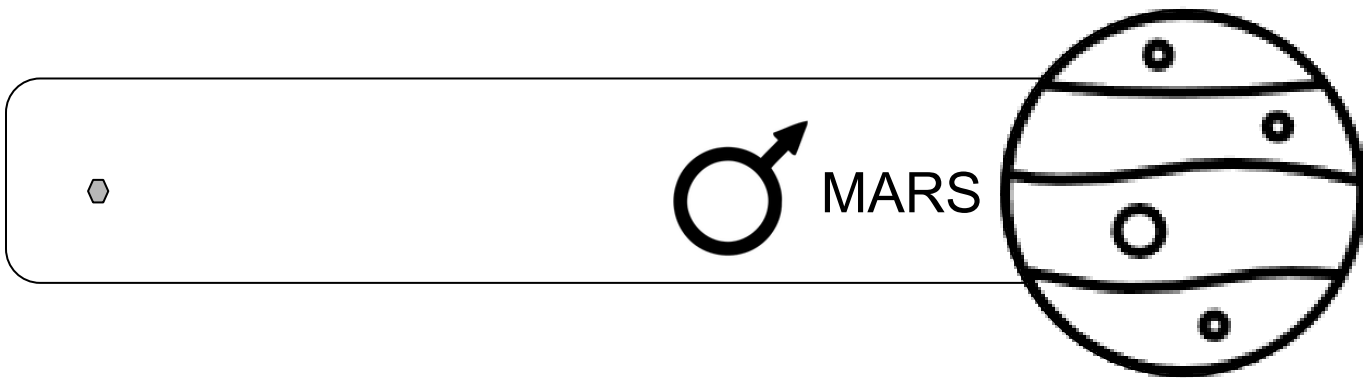


Back

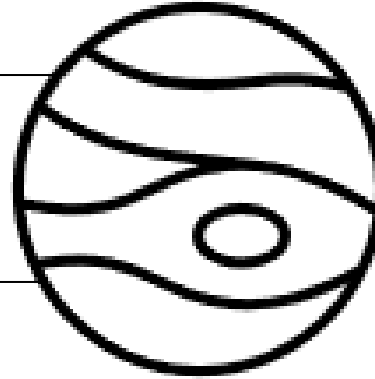


# The Planets - Activity 3 - Planet Fan Template (V2)





4 JUPITER

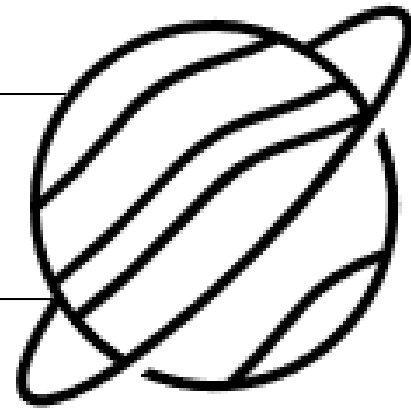


h SATURN

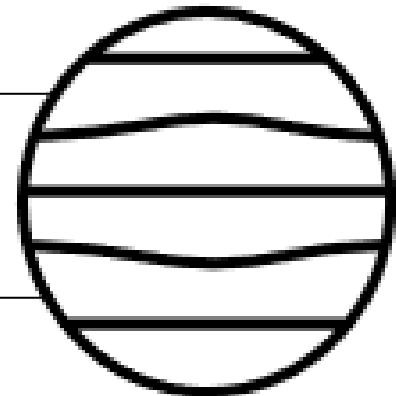




URANUS



NEPTUNE



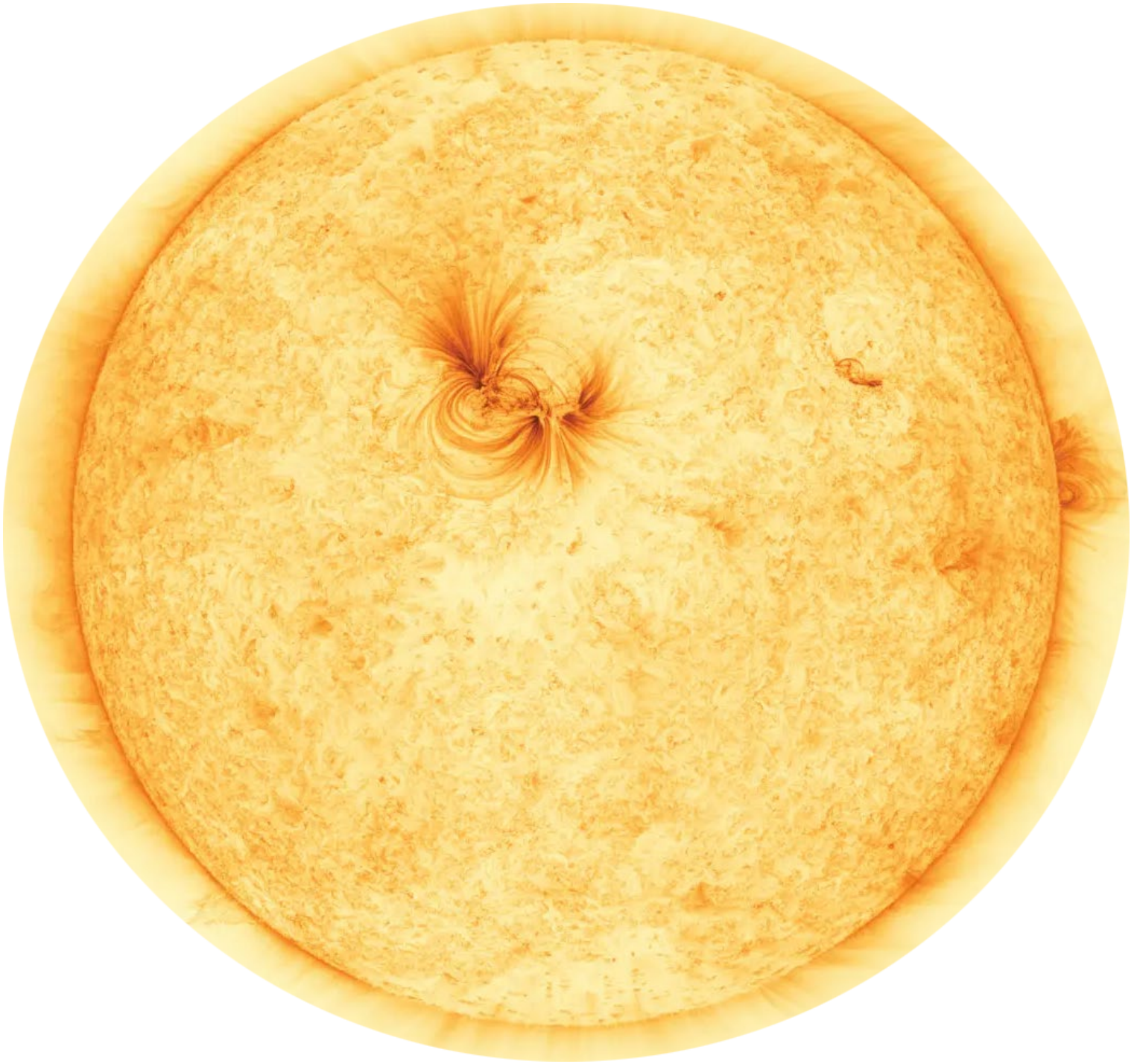
<b>MERCURY</b>		<b>JUPITER</b>	
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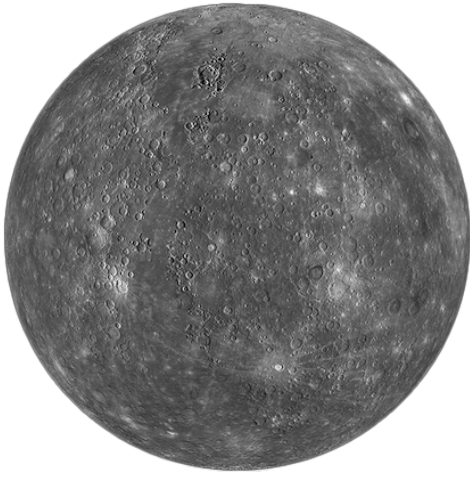
## Planet Images



## The Sun

Source: [NASA/UCLan](#)





## Mercury

Source: [NASA](#)



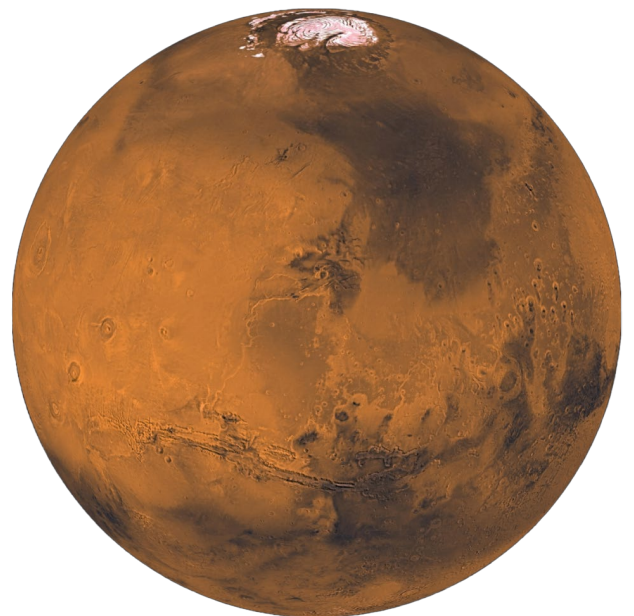
## Venus

Source: [NASA](#)



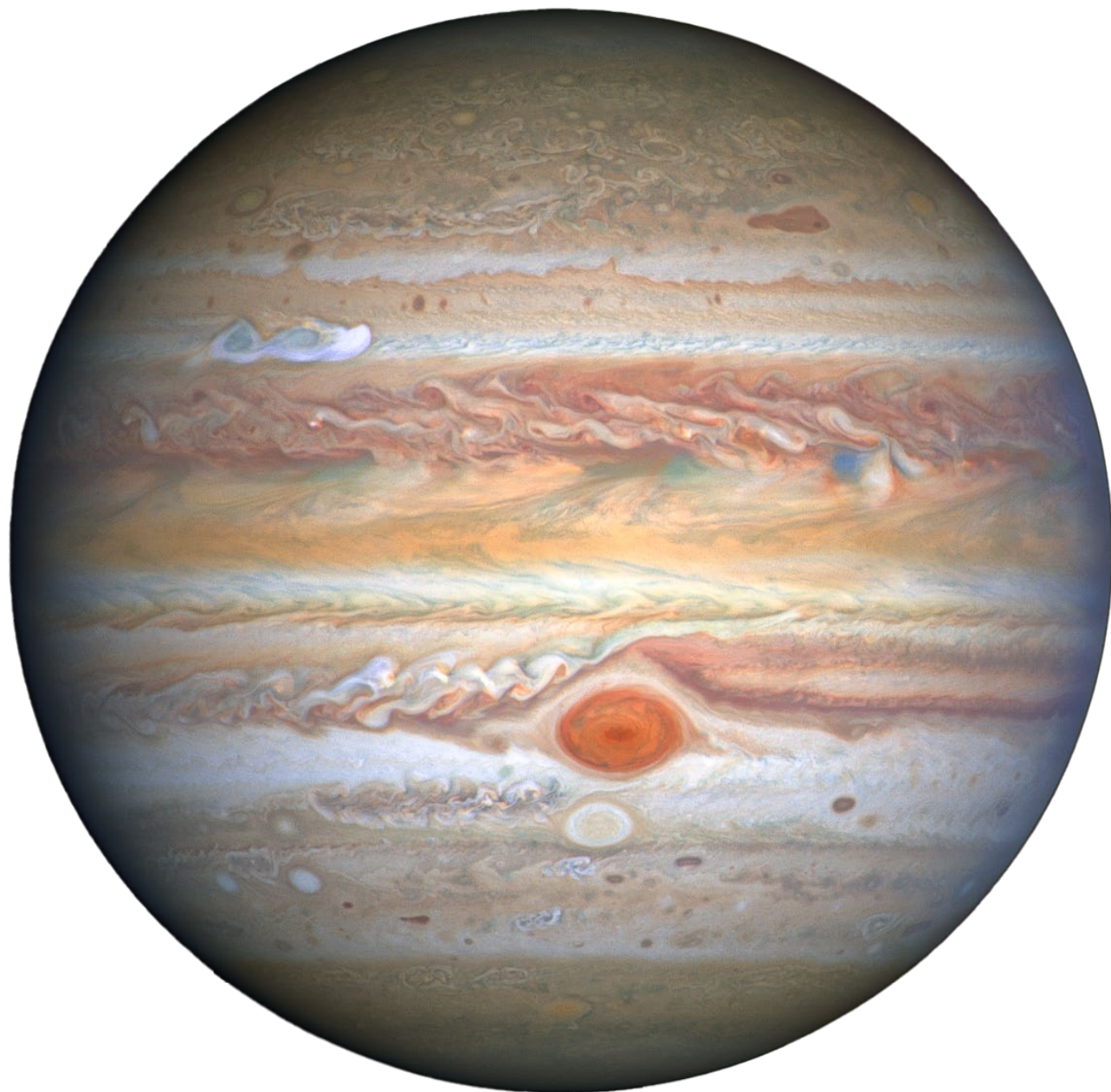
## Earth

Source: [NASA](#)



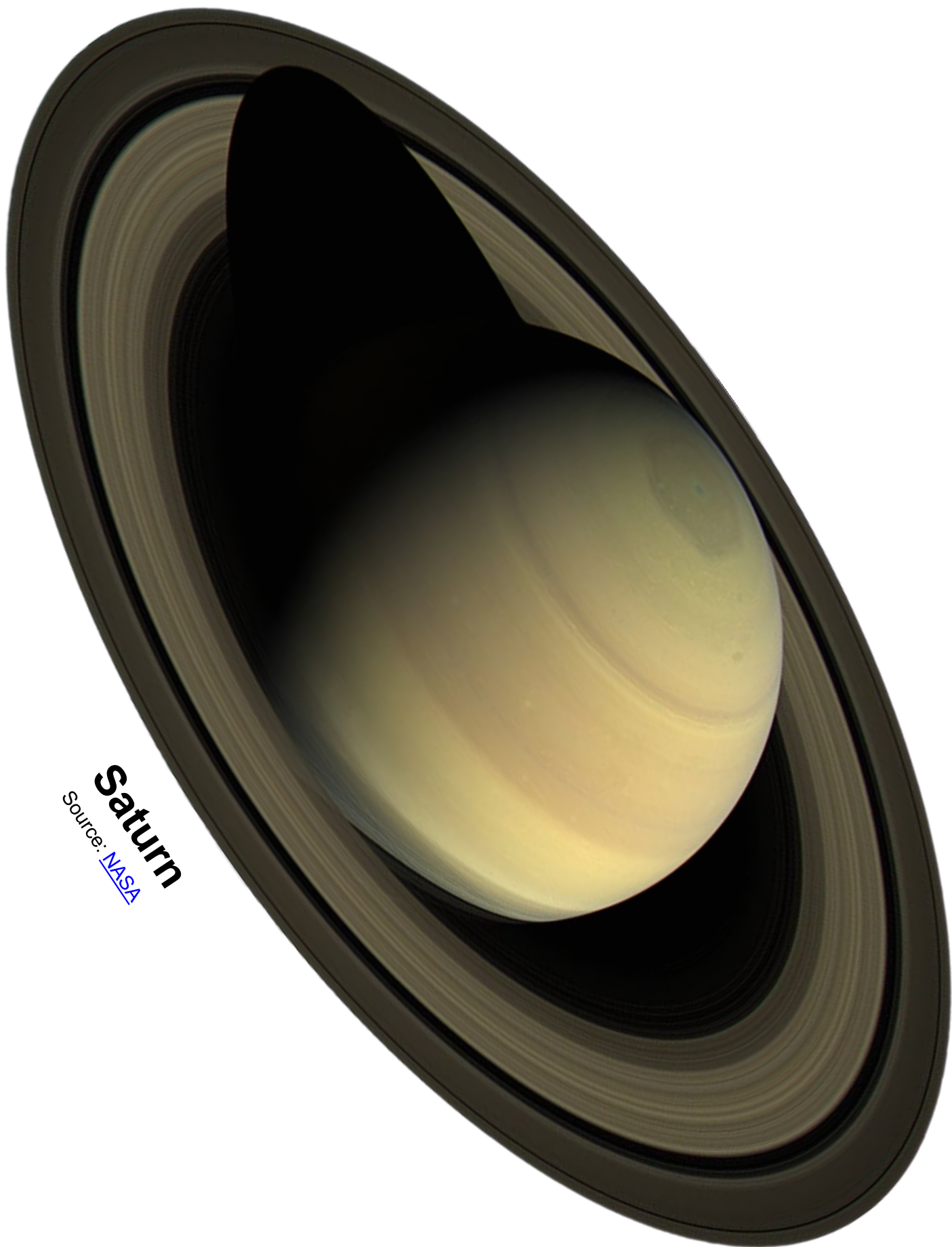
## Mars

Source: [NASA](#)

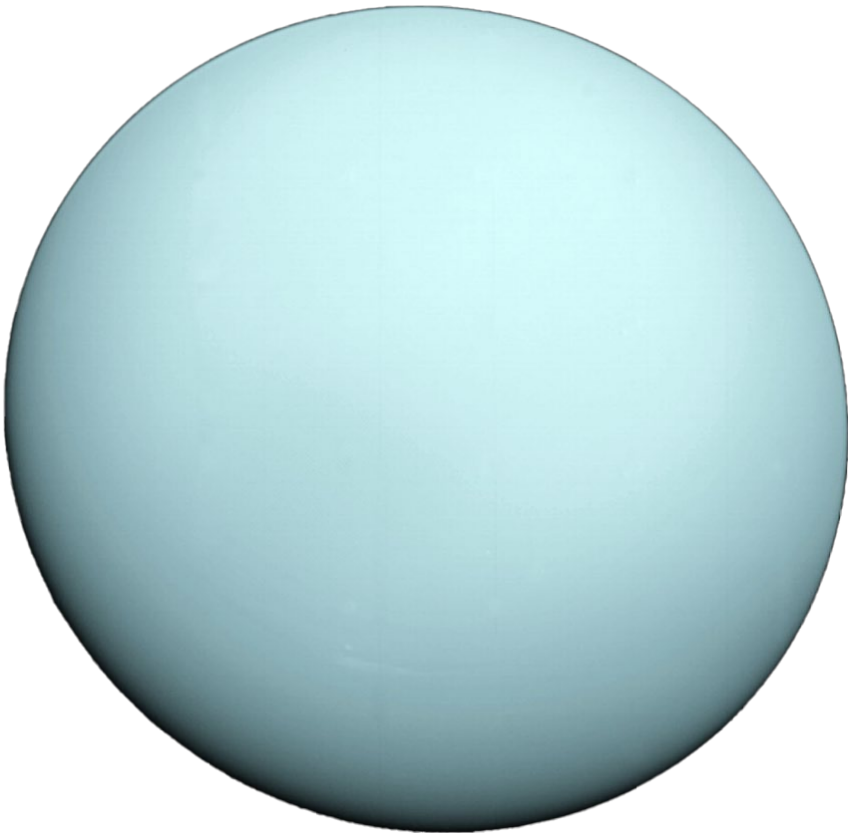


# Jupiter

Source: [NASA](#)

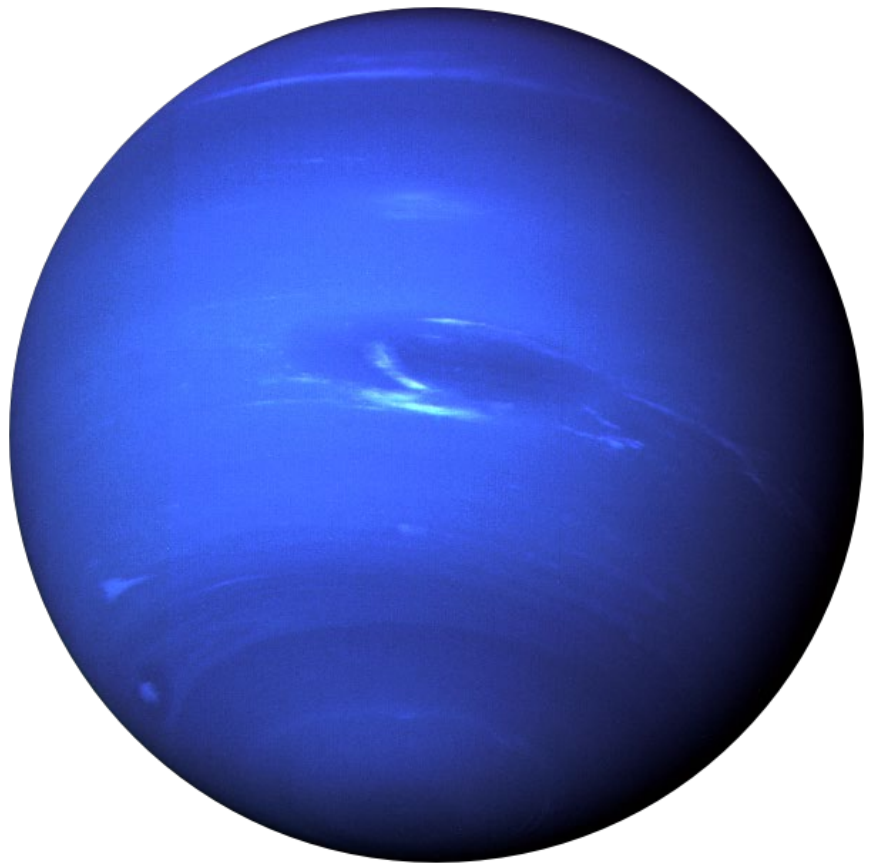


**Saturn**  
Source: [NASA](#)



**Uranus**

Source: [NASA](#)



**Neptune**

Source: [NASA](#)